amendments. By the present amendments, claims 19, 39, 57, 68, and 70 are amended. The specification is amended at the Summary of the Invention to render it consistent with the amended claims. No new matter is introduced into the claims by the foregoing amendments, full support therefore being provided by the specification and drawings. Further examination and consideration of the application is respectfully requested in light of the foregoing amendments and the following remarks.

Claim Rejections

Claims 19, 39, and 57 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite. The rejections are respectfully traversed.

These claims have been amended to specify that the electrically conductive paths each have a current carrying segment that extends with a circumferential aspect to the support. Applicants respectfully submit that these claims now refer to one plane only and further clarify that the segments rather than any other feature of the invention extend with the circumferential aspect.

Claims 19, 20, 22, 25, 27, 39, 40, 44,45, 50, 63, 64, and 68-71 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,153,494 to Hollis, Jr. The rejections are respectfully traversed.

With specific reference to claim 19 as amended, while *Hollis* does show current carrying paths having segments 76 which extend with a circumferential aspect to the support 70, it is critical to note that in *Hollis* the segments 76 are not disposed in and do not extend across lines of magnetic flux within an air gap a required in claim 19. In *Hollis*, the segments 76 are essentially in free space and, as they do not pass through lines of magnetic flux, no force is generated by virtue of the current flowing through the segments 76. In direct contrast, in the invention defined by present claim 19, it is the current passing through the segments and interacting with the lines of magnetic flux extending across the air gap in which the segments are disposed that creates the thrust force causing the motion of the support relative to the magnet. Moreover, *Hollis* specifically states at column 12, lines 26 and 27 that the coil ends (i.e., segment 76 of the coil shown in Figure 2) produce no useful force.

As a consequence, the forces produced and acting on the support in the present invention are different to that preferred by *Hollis* which gives rise to different motions of the supports. The forces generated by the arrangement in *Hollis* act with a moment arm relative to the geometric center of the support 70 thus generating a torque on the support 70. This is disclosed in column 4, lines 23-27. It is this torque that produces the rotary or "theta" motion referred to in *Hollis*. In the embodiment of the invention defined by present claim 19 and as depicted in Figure 1A, the forces TA, TB and TC generated by the interaction of current passing through the segments 16 act through a geometric center of the support 14. This enables the production of an orbital, as distinct from rotary, motion of the support 14.

Amended claims 39, 68 and 70 are likewise distinguishable from *Hollis* for the same reasons claim 19 is distinguishable. In addition, with specific reference to claim 68, it is submitted that *Hollis* does not specify or suggest supplying AC currents to the segments.

With specific reference to claim 71, this claim specifies that each electrically conductive path has a segment lying in a plane substantially perpendicular to a plane of the support. However, in *Hollis*, the entirety of each conductive path is in a plane parallel to the support 70. In Applicants' invention, the interaction of current passing through the segments and lines of magnetic flux produces thrust forces acting on the support along an axis perpendicular to the plane of the support. No such forces are, or can be, produced by *Hollis*. Such forces would have the effect of moving the support vertically up or down. *Hollis* mentions the production of torques perpendicular to the plane of the support but not thrust forces. It is the torques that produce the theta rotation described by *Hollis*. This is a totally different force and produces a totally different motion to the thrust forces defined by claim 71.

Inasmuch as all of the rejected independent claims are clearly distinguishable from *Hollis* and therefore patentable over *Hollis*, it is submitted that those claims dependent from the independent claims are likewise patentable over *Hollis*. Moreover, claim 20 specifies that the magnet is configured to define a space in which the support is disposed and provides access to both the top and bottom surfaces of the support. As the support is a single element, claim 20 means that top and bottom surfaces of one and the same element can be accessed. In contrast in

Hollis, the top surface of the upper plate 70 can be accessed and the bottom surface of the lower plate can be accessed, but one cannot access the top and bottom surface of any one plate.

Further, *Hollis* does not disclose that the support 70 has a central aperture as defined by claim 26. The sections of *Hollis* referred to by the Examiner (namely column 6, lines 18-20 and column 7, lines 46-49) indicate that the frames 50 and 90 are provided with apertures not the support 70.

Fro the foregoing reasons, Applicants respectfully submit that claims 19, 20, 22, 25, 27, 39, 40, 44,45, 50, 63, 64, and 68-71 are patentable over *Hollis*, and the rejections should be withdrawn.

Allowable subject matter –

Applicants acknowledge with thanks the Examiner's determination of allowable subject matter in claims 21, 23, 24, 26, 28-38, 41-43, 46-49, 51-56, 58-62. In light of the foregoing, however, further amendments to these claims are deemed unnecessary since they are now clearly allowable. Further claim 57 is now allowable, in view of the clarifying amendment. Claims 65-67 and 72 are allowed.

It is believed that the application is now in condition for allowance and prompt notice of allowability is respectfully requested. Any questions concerning the amendments or the application can be directed to the undersigned by email or by telephone.

Respectfully submitted,

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Appendix A

[0008] According to the present invention there is provided an electric machine having a magnet producing lines of magnetic flux extending through an air gap in a first direction, and a support capable of at least two-dimensional motion relative to said magnet in a single plane containing said support ~~relative to the magnet~~. The support is provided with at least two electrically conductive paths, each having a current carrying segment which extends with a circumferential aspect to said support, and the segments are disposed in and extend across the lines of magnetic flux within said air gap in a second direction substantially perpendicular to the first direction~~, and extend with a circumferential aspect to a plane containing the support~~. Thus, interaction of an electric current flowing through a particular segment and the lines of magnetic flux produces a thrust force to cause motion of the support relative to the magnet.

Appendix B

[0008] According to the present invention there is provided an electric machine having a magnet producing lines of magnetic flux extending through an air gap in a first direction, and a support capable of at least two-dimensional motion relative to said magnet in a single plane containing said support. The support is provided with at least two electrically conductive paths, each having a current carrying segment which extends with a circumferential aspect to said support, and the segments are disposed in and extend across the lines of magnetic flux within said air gap in a second direction substantially perpendicular to the first direction. Thus, interaction of an electric current flowing through a particular segment and the lines of magnetic flux produces a thrust force to cause motion of the support relative to the magnet.

Appendix C

19. (Amended) An electric machine including at least:

a magnet producing lines of magnetic flux extending through an air gap in a first direction; and,

a support capable of at least two dimensional motion relative to said magnet in a single plane containing said support ~~relative to the magnet~~, said support provided with at least two electrically conductive paths each having a current carrying segment which extends with a circumferential aspect to said support, said segments disposed in and extending across said lines of magnetic flux within said air gap in a second direction substantially perpendicular to the first direction; ~~and extend with a circumferential aspect to a plane containing the support and~~ wherein interaction of an electric current flowing through a particular segment and said lines of ~~the~~ magnetic flux produces a thrust force to cause said motion of said support relative to said magnet.

39. (Amended) An electric machine including at least:

a magnet producing lines of magnetic flux extending through an air gap in a first direction; and,

a support provided with at least three electrically conductive paths, each path having a segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in and extending across said lines of magnetic flux within said air gap in a second direction substantially perpendicular to said first direction; ~~said segments further extending with a circumferential aspect to a plane containing said support;~~

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnet moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnet;

wherein interaction of an electric current flow through a particular segment and the said lines of magnetic flux create a thrust force to drive said relative motion of said support and magnet.

Appendix C

57. (Amended) An electric machine including at least:

a magnet producing lines of magnet flux extending through an air gap in a first direction; and,

a support provided with at least three electrically conductive paths, each path having an active current carrying ~~a~~ segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in and extending across said lines of magnetic flux within said gap in a second direction substantially perpendicular to said first direction; ~~,said segments further extending with a circumferential aspect to a plane containing of said support~~

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnet moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnet;

a coupling for mechanically coupling said support to a mechanical input that moves said support relative to said magnet to induce electric current to flow in said conductive paths,~~;~~ whereby said electric machine acts as an electric generator.

68. (Amended) A method for controlling motion of a support including the steps of:

providing said support with two or more electrically conductive paths each path having a segment that extends with a circumferential aspect to said support;

providing one or more magnets having one or more air gaps through which lines of magnetic flux extend;

providing respective AC currents to said segments;

disposing ~~respective~~ said segments ~~of each path in one of~~ in respective ones of said air gaps, said segments further disposed so that thrust force generated by interaction of respective AC currents flowing through said segments and said magnetic flux induces two dimensional motion of said support in a single plane containing said support or said magnets; and,

Appendix C

controlling one or more of the amplitude, frequency, polarity and phase of said AC electrical currents fed to respective segments to control said thrust forces and thereby control said motion of said support.

70. An electric machine including at least:

a plurality of magnets each having an air gap through which lines of magnetic flux extend; and,

a support provided with at least three electrically conductive paths, each path having a segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in respective air gaps and extending across said lines of magnetic flux in said air gap in a direction substantially perpendicular to said lines of magnetic flux; ~~,said segments further extending with a circumferential aspect to a plane containing said support~~

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnets moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnets;

wherein interaction of an electric current flowing through a particular segment and the said lines of magnetic flux create a thrust force to drive said relative motion of said support and magnets.

Appendix D

19. An electric machine including at least:

a magnet producing lines of magnetic flux extending through an air gap in a first direction; and,

a support capable of at least two dimensional motion relative to said magnet in a single plane containing said support, said support provided with at least two electrically conductive paths each having a current carrying segment which extends with a circumferential aspect to said support, said segments disposed in and extending across said lines of magnetic flux within said air gap in a second direction substantially perpendicular to the first direction; wherein interaction of an electric current flowing through a particular segment and said lines of magnetic flux produces a thrust force to cause said motion of said support relative to said magnet.

39. An electric machine including at least:

a magnet producing lines of magnetic flux extending through an air gap in a first direction; and,

a support provided with at least three electrically conductive paths, each path having a segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in and extending across said lines of magnetic flux within said air gap in a second direction substantially perpendicular to said first direction;

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnet moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnet;

wherein interaction of an electric current flow through a particular segment and the said lines of magnetic flux create a thrust force to drive said relative motion of said support and magnet.

57. An electric machine including at least:

a magnet producing lines of magnet flux extending through an air gap in a first direction; and,

Appendix D

a support provided with at least three electrically conductive paths, each path having an active current carrying segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in and extending across said lines of magnetic flux within said gap in a second direction substantially perpendicular to said first direction;

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnet moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnet;

a coupling for mechanically coupling said support to a mechanical input that moves said support relative to said magnet to induce electric current to flow in said conductive paths, whereby said electric machine acts as an electric generator.

68. A method for controlling motion of a support including the steps of:

providing said support with two or more electrically conductive paths each path having a segment that extends with a circumferential aspect to said support;

providing one or more magnets having one or more air gaps through which lines of magnetic flux extend;

providing respective AC currents to said segments;

disposing said segments in respective ones of said air gaps, said segments further disposed so that thrust force generated by interaction of respective AC currents flowing through said segments and said magnetic flux induces two dimensional motion of said support in a single plane containing said support or said magnets; and,

controlling one or more of the amplitude, frequency, polarity and phase of said AC electrical currents fed to respective segments to control said thrust forces and thereby control said motion of said support.

Appendix D

70. An electric machine including at least:

a plurality of magnets each having an air gap through which lines of magnetic flux extend; and,

a support provided with at least three electrically conductive paths, each path having a segment which extends with a circumferential aspect to said support, said segments equally spaced from each other and disposed in respective air gaps and extending across said lines of magnetic flux in said air gap in a direction substantially perpendicular to said lines of magnetic flux;

a first one of said segments disposed at a non-diametrically opposed location relative to a second one of said segments;

said support and magnets moveable relative to each other where said motion includes two dimensional motion in a single plane containing said support or said magnets;

wherein interaction of an electric current flowing through a particular segment and the said lines of magnetic flux create a thrust force to drive said relative motion of said support and magnets.